

DART System Status Report - November 2002

FY02 Accomplishments/Costs

1. DART maintenance- \$994,244 from NTHMP

a. Surface moorings and bottom packages at all five North Pacific stations; D157, D165, D171, D130, and D128 were recovered and replaced from UNOLS vessel MAURICE EWING during a scheduled maintenance cruise in June 2002. The scheduled Sept 2002 D125 maintenance cruise was cancelled because of ship propulsion failure. Equatorial station D125 will undergo maintenance from NOAA ship KAIMIMOANA in Dec 2002.

b. The 6-buoy network that was completed in summer 2001 remains established and all sites are providing data with the exception of D128, which ceased all transmissions on Sept 22, 2002. Data return rates for the Nov 2001 through Oct 2002 time period is greater than 98.5% for all sites except D128. The data return rate at site D128 is 42% for this report year.

c. A new BPR circuit board and micro controller was designed and field-tested by PMEL in FY '02. Electronic chip obsolescence forced a redesign of critical components of the BPR. A complete BPR alongside a previous version BPR was testing in 200m in Puget Sound for a period of ~3 months with excellent results. Features include a smaller printed circuit board that uses less power with no degradation of BPR accuracy. This new design uses 3.3volt technology (cellular phones) and assures that BPRs can be built with off-the-shelf electronic integrated circuits for years to come.

d. HPCC (High Performance Computing and Communications) proposal to Mirror the PMEL DART web site at a remote NOAA facility and implement a caching reverse-proxy known as Squid to distribute the load was funded. With NDBC scheduled to provide web based access to the DART data, the necessity of carrying out this proposal is being reevaluated.

e. The DART Quality Control website will be maintained by PMEL for a several-month overlapping test period after NDBC has implemented the DART website they are currently developing. At present, NDBC plans to deliver quality-controlled DART data with no post-processing, such as tide removal to enhance the tsunami signal. It is not clear whether or

not NDBC is willing to include such post-processing as part of its DART website. Nor is it clear whether or not NTHMP partner States and Federal agencies need a web site that includes post-processing enhancements. This issue should be explored by the Steering Group.

f. The transfer of operational responsibility, with continued engineering support by PMEL, for the DART array from PMEL to NDBC (National Data Buoy Center) is underway. NDBC personnel (Teng, Brown, Knight and Brewer) were on site at PMEL in April 2002 to gather information. Taft, Brown, Knight, and Brewer were onboard EWING to participate in the DART mooring maintenance and deployment in July. Meinig, Stalin, and Tagawa are scheduled to visit the NDBC facility in Mississippi in late Oct 2002 to assist NDBC with assembly procedures and provide technical assistance where needed.

g. The timeline of the technical transfer has been reduced from 3 to 2 years and is expected to be completed by Oct 2003. The expected impacts of this transfer remain:

- IMPROVE WARNINGS – NDBC will maintain the DART array and provide the necessary 24/7 support for the warning centers. This level of support is inappropriate for a research laboratory.
- INFUSE TECHNOLOGY – this action will transfer a prototype system from a research laboratory to an operational center, enhancing public safety.
- INCREASE EFFICIENCY – NDBC can assimilate the DART array into its operations and gain efficiencies by consolidating platforms, ships, and technicians.

2. Ship time - \$501,480 from NOAA

To maintain the 6 DART array required 24 days of class I ship time (R/V Maurice Ewing) at a cost of \$20,895/day or a total cost of \$501,480 and piggy back operations on the Kaimimoana for D125 near the equator during operations of the TAO Project.

3. Scientific support - \$244,600 from NOAA/PMEL

Scientific and technical support for the DART network was necessary to ensure optimal value to the Tsunami Warning System. Activities included quality control on DART real time data through tidal analysis and background noise, monitoring and evaluating tests and triggers, data assessment of DART malfunctions, and an evaluation of the triggering

algorithm.